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## Do PhDs make better presidents?

By Joshua Rothman

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Do Ph.Ds make better presidents? We know that education is useful in our everyday lives. How useful is it when we're leading whole nations? That's the question asked by the economists Timothy Besley, Jose Montalvo, and Marta Reynal-Querol in a paper called "Do Educated Leaders Matter?" published in the August issue of *The Economic Journal*.

It's hard to pick out a single variable like education and judge how much it affects policy decisions, so the researchers adopted a narrow focus. First, they looked to "random leadership transitions" - moments when leaders were removed from office "due to natural death, accident or serious illness." (They found 185 such transitions since 1875.) Next, they looked to economic growth. By comparing the rate of growth before a leader's unexpected demise to the rate of growth afterwards, they arrived at a rough picture of how much that leader mattered. They could then cross-reference that data with information about educational attainment.

There is, in fact, a correlation: Educated leaders tend to preside over more economic growth. "On average," they write, "the departure of an educated leader" - one with a postgraduate education, like a Ph.D or law degree - "leads to a 0.713 percentage point reduction in growth"; by contrast, the death of a leader without a postgraduate degree costs an economy only 0.05 percent of growth, on average. Meanwhile, when comparatively less-educated leaders die, their replacements are statistically likely to be more educated, and so growth tends to increase. Educated leaders, in short, are doing something right.

Do educated leaders make better decisions? Do they surround themselves with better advisers? Were they just smarter to begin with? It's not clear - and, in a sense, it doesn't matter. Certainly, it's possible to put too much faith in "the best and the brightest" - but on average, and for whatever reasons, education is a predictor of success.

Knights in shining (and incredibly heavy) armor

We've all wondered at those huge suits of armor worn by medieval knights and preserved in today's museums: How well could you possibly fight while wearing all that steel? Not very well, according to physiologists Graham N. Askew, Federico Formenti, and Alberto E. Minetti. By asking professional "fight interpreters" to wear armor while walking and running on treadmills, they've been able to show just how much armor constrains movement.

Their paper, "Limitations imposed by wearing armour on Medieval soldiers' locomotor performance," just published in the *Proceedings of the Royal Society B: Biological Sciences*, approaches the problem from the point of view of energy. By having the interpreters wear oxygen masks while on the treadmill, Askew, Formenti, and Minetti were able to measure how much oxygen they needed to stay in motion. A typical suit of armor could weigh as much as 100 pounds, but they found that it's not the weight itself that matters - it's the distribution of that weight. Because each arm and leg is weighed down, it's harder to move, and that makes walking and running more difficult, even as the face mask makes it harder to breathe.

Walking with 100 pounds in a backpack, you'd use 1.7 times as much energy as you would were you not weighed down - but wearing that weight as armor, you'll use 2.3 times as much energy. "The significant energetic cost of moving in armour," the researchers conclude, "is likely to have had a profound limitation on soldiers' performance, and may have contributed to the outcome of certain battles."

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